



NASA Exploring Space Challenges, where today's students are tomorrow's explorers.
Encourage students to create, design, research and use technology at
<http://esc.nasa.gov>.

Mission: Fuel Your Imagination! Challenge

Grade Levels: 3-4, 5-6, 7-8, 9-12^a

Focus Questions: Can you incorporate scientific facts into creative writing? What is the benefit of using scientific information in such creative processes?

Instructional Objectives:

1. Students will learn how real science is woven into fiction from *Zathura* author and NASA engineer.
2. Students will understand the components of a story, such as character development, plot, climax, and resolution.
3. Students will learn about NASA's vision for exploration.
4. Students will write a fictional short story.
5. Students will learn to evaluate and critique each other's work.

National Standards (for grades 3-8):

Grades 3-5: Science

Science as Inquiry:

- Has ability to do scientific inquiry
- Has understandings about scientific inquiry

Physical Science:

- Understands the properties of objects and materials
- Understands the position of and motions of objects
- Understands the motion of objects in relation to the forces applied on that object

Earth and Space Science:

- Understands the objects in the sky
- Understands the Earth's place in the Solar System

Science and Technology:

- Understands that science and technology work together
- Has basic understandings about science and technology

History and Nature of Science:

- Understands that science is a human endeavor



Grades 3-5: Language Arts:

- Uses general skills and strategies to acquire new information
- Use of spoken, written language to communicate effectively with a variety of audiences and for different purposes
- Uses a wide range of strategies during the writing process appropriately to communicate with different audiences for a variety of purposes

Grades 6-8: Science

Science as Inquiry:

- Has ability to do scientific inquiry
- Has understandings about scientific inquiry

Physical Science:

- Understands the motion of objects in relation to the forces applied on that object
- Understands the concept of transfer of energy

Earth and Space Science:

- Understands the Earth's place in the Solar System
- Understands that the history of the Earth has been changing in life and form

Science and Technology:

- Has basic understandings about science and technology

Science in Personal and Social Perspectives:

- Understands the potentiality of natural hazards to human society

History and Nature of Science:

- Understands that science is a human endeavor

Grades 6-8: Language Arts:

- Uses general skills and strategies to acquire new information
- Use of spoken, written language to communicate effectively with a variety of audiences and for different purposes
- Uses a wide range of strategies during the writing process appropriately to communicate with different audiences for a variety of purposes

INTRODUCTION



NASA Exploring Space Challenges invites you and your class to participate in the **Fuel Your Imagination! Challenge**. Based upon an activity created for a NASA DLN™ webcast event that occurred in 2005, students must write a short fictional story that incorporates real science, mathematics or engineering facts. All stories in your class must first go through a peer-judging event, and the winning story from your class can be submitted to the national **Fuel Your Imagination! Challenge**. Stories can be submitted under one of four categories: grades 3-4, 5-6, 7-8, and 9-12^a. One winning story will be selected for each grade category and receive a prize.

Watch the archived web cast of “Author Meets NASA Scientist: Turning Imagination into Reality,” where author and artist Chris Van Allsburg met with NASA engineer Jennifer Keys to share their thoughts about imagination in art and scientific exploration. Mr. Van Allsburg uses examples from his book, *Zathura*, to explain how he used creative writing to incorporate real science into his story. Then read *Zathura* in your class and apply the writing activity enclosed.

So students, use your imagination, get writing, and let NASA read about your vision for space exploration to the Moon, Mars and beyond!

^a *Due to a number of requests, this year we are adding the grade 9-12 category. However, it is the responsibility of the registered teacher in grades 9-12 to modify this activity for the older students. The Challenge format and rules remain the same for all grades.*

CHALLENGE REQUIREMENTS

Pre-Challenge Requirements

1. **Online teacher registration.** A teacher or administrator must register their class or school online by emailing nasa-esc@nasa.gov. Please include teacher name, school name, school address, number of students intending to write a story, grade level and email address.
2. **Pre-assessment.** An important part of each Challenge is an evaluation component. The NASA ESC Project Office has developed a set of questions for students participating in this Challenge. A student's story will not be judged on the answers to these evaluation questions. These questions are simply for information purposes only. Upon registration, these questionnaires will be emailed to you. Pre-assessments must be completed prior to students starting this activity.

Objective One

- o A core component of this Challenge is based upon an archived DLN event, "Author meets NASA Scientist." This web cast was filmed on November 16, 2005 out of NASA Langley Research Center. Artist and author Chris Van Allsburg met with NASA scientist, Jennifer Keys, to share their thoughts about imagination in art and scientific exploration. Mr. Van Allsburg discussed his book, *Zathura*, and how he used creative writing to incorporate real science into his story. Mr. Van Allsburg also fielded an assortment of questions from students and teachers across the country. All registered teachers will be mailed a copy of this archive on compact disc.

Objective Two

- o **Complete the *Zathura* Activity** (see Appendix, p. 13). This Challenge is based upon an activity created by Houghton Mifflin (*Zathura* publishers) in cooperation with NASA Office of Education. First read the story, *Zathura*. If you don't have a copy of the book in your school library, try your local public library. Discuss the story components, such as the story's elements, climax, conflict and resolution, within your class. The activity then asks you to identify three or four real science, math or engineering facts. Students can go to the library, use textbooks, or research the internet for these items. Then use those facts and write a fictional short story. *Use your list of facts to write about your vision for space exploration.*

Objective Three

- o **Host a Local Challenge.** Each student should write a story that incorporates *at least three* real science, math or engineering facts. Each story should be 1500 words or less in length and saved in an electronic format: Acrobat portable document (.pdf), Word document (.doc) or plain text (.txt). Then host a peer evaluating session within the class. Fellow students should read and review each other's stories, then select the best story of the class to be submitted to the National **Fuel Your Imagination! Challenge**.

Objective Four

- **Story Submission.** The registered teacher or administrator must email one selected story from their class to nasa-esc@nasa.gov. Each submission to the National Challenge must include a cover page that includes registered teacher name, student name, grade, school name, and school address.^b If the story contains original artwork, a copy can be mailed to the NASA ESC Project Office, but the text still must be sent electronically. Artwork will not be considered in the judging process as it is not a requirement for this Challenge, but will be included for publication if your story is selected by the judges.

^b *The front page will not be included in the 1500 limit word count.*

Post Challenge Requirements

1. **Post-assessment.** Once the activity is complete and students have written their stories, please distribute the post-assessment to your students. Again, a student's story will not be judged on the answers to these evaluation questions. These questions are simply for information purposes only. Please return the both assessments no later than February 15, 2007. For each set of pre and post assessments returned, we will send you a small NASA gift.
2. **Certificate of participation.** Each class to successfully complete all requirements of the Fuel Your Imagination! Challenge will receive a certificate of participation.

CHALLENGE TIMELINE

| Event | Date | Notes |
|---------------------|---|--|
| Registration | November 21, 2006 – January 30, 2007 | Teachers must first register prior to student registration |
| Local Challenges | January 2007 | Students must peer-review stories in class |
| Submission deadline | January 31, 2007 | Winning student author from each class to submit story online. |
| National Challenge | February/March 2007 | Judged by NASA representatives and educators |

GENERAL RULES AND REGULATIONS FOR NASA-ESC

1. All participants must successfully register online.
2. Participation is restricted to students and teachers attending U.S. Schools (this includes U.S. possessions and schools operated by the U.S. for the children of American personnel overseas).
3. Teachers or administrators must register his/her students^C by emailing nasa-esc@nasa.gov. Include teacher name, school name, school address, number of students participating, grade level, and email address.
4. There is no limit to the number of student participants from each school.
5. Only students whose names have been submitted through his/her teacher's registration will be allowed to submit entries to the NASA ES.
6. All students must have access to the internet in order to participate in a NASA Exploring Space Challenge.
7. All entries are evaluated according to the published rubrics and requirements for each respective challenge. Judges' decisions are final.
8. Each registered student/class/school must submit separate entries for their respective challenge.
9. Each document submitted to the NASA ESC project office must include the student last name, or the school's name, and the challenge abbreviation in the title of the document. Please see the following examples:

| Challenge | Example |
|------------------------|--------------|
| Name the ISS Node 2 | Name_N2.ppt |
| Moon Math | Name_MM.doc |
| Fuel Your Imagination! | Name_FYI.doc |
| Design a Lunar Base | Name_DLB.ppt |
| Teacher Challenge | Name_TC.pdf |

10. All work submitted to NASA ESC must be original and free from copyright.
11. NASA maintains the right to accept or reject any submitted work. All entries become the property of NASA and the Exploring Space Challenges.

12. Final documents for each respective challenge must be electronically submitted by their deadlines, as follows:

| Challenge | Deadline | Documents |
|------------------------|----------------------------------|----------------------------------|
| Name the ISS Node 2 | December 1 st , 2006 | Electronic scrapbook & essay |
| Moon Math | December 15 th , 2006 | Slide Presentation & report |
| Fuel Your Imagination! | January 31 st , 2007 | Story |
| Design a Lunar Base | March 31 st , 2007 | Slide presentation or video |
| Teacher Challenge | March 16 th , 2007 | Instructional guide and proposal |

If you encounter any difficulties, or have any questions please direct them to the NASA ESC project office at nasa-esc@nasa.gov.

^c The NASA-ESC Project Office understands that some students may drop out during the course of their Challenge. If such an event occurs please notify the NASA ESC Project Office. If this event leaves a team with only one student, the student remaining in the Challenge will not be penalized and may have the choice to continue with their project of his/her own or join another team. It is the teacher's responsibility to contact the NASA ESC Project Office if any changes occur in a teams' participation status.

GENERAL RULES AND REGULATIONS FOR FUEL YOUR IMAGINATION!

1. Only students in grades 3-12 may participate in this Challenge.
2. All teachers planning to participate in this Challenge are expected to have their class watch the NASA DLN™ archived web cast, "Author Meets NASA Scientist."
3. Teachers must lead peer-judging within their classroom to decide on one winning story to be submitted to the national challenge. Only one story per registered teacher/administrator will be permitted for submission. All peer-judging events must be arranged by the teacher/school and should be completed prior to January 29, 2007.
4. There is a maximum of three entries per grade category for each registered school as long as each entry is from a different class or teacher.
5. Stories must be 1500 words or less.
6. Each winning student author from his/her class must have their teacher email their story to nasa-esc@nasa.gov. Stories must be sent in one of the following formats: Acrobat portable document (.pdf), Word document (.doc), or plain text (.txt). Paper copies will not be considered for judging. If the story contains original artwork, a copy can be mailed to the NASA ESC Project Office, but *artwork will not be judged as it is not a requirement of this Challenge*.

7. Only one story will be selected from each of the following categories: grades 3-4, 5-6, 7-8, 9-12. These four stories will be published online and the authors will receive a copy of *Zathura* signed by Chris Van Allsburg.
8. Only one story will then be chosen from all submitted entries in all categories as a national winner. The story will be published on-line and student author will receive an all-expenses paid trip to Space Flight Academy (in Wallops, VA) or Rocketry Camp (hosted at a NASA Center)^d. No family members or teachers will be included in this award.

^d NASA and the Exploring Space Challenges have the right to change any prize as resources may allow. If circumstances beyond our control necessitate the invalidation of a prize to any student, teacher, class or school, then NASA and the Exploring Space Challenges cannot be held liable.

RESOURCES

The sites listed below are a sampling of existing NASA and other related sites on an assortment of topics. NASA does not endorse the non-NASA sites; they are offered merely as examples.

http://esc.nasa.gov/documents/webcontent_fyi_stories_06.pdf

Read last year's winning stories of the **Fuel Your Imagination! Challenge**.

http://www.nasa.gov/audience/forkids/home/F_Vision_Slideshow_Text.html

An explanation of NASA's Vision for Space Exploration – the kid-friendly version.

http://www.nasa.gov/missions/solarsystem/explore_main.html

The latest information on NASA's Vision for Space Exploration. Click on the banner and explore an interactive site.

<http://ksnn.larc.nasa.gov/home.html>

NASA's Kids Science Network site.

<http://www1.edspace.nasa.gov/astroschool/survival/>

NASA Educator Astronaut webpage that includes information all about NASA and astronauts.

<http://marsprogram.jpl.nasa.gov>

A great site to see the latest NASA science about Mars.

<http://lunar.gsfc.nasa.gov/index.html>

Another great site to explore the upcoming lunar mission.

<http://www.houghtonmifflinbooks.com/features/zathura/>

Private site sponsored by *Zathura* publishers, Houghton Mifflin.

<http://www.learner.org/exhibits/literature/read/plot1.html>

An excellent source to answer the question, "What makes a good short story?"

<http://teacher.scholastic.com/lessonplans/spacescience/index.htm>

A private site sponsored by Columbia Pictures, this site has easy-to-use lessons and products about story-writing, with inspiring images from the feature film *Zathura*.

http://www.orangeusd.k12.ca.us/yorba/elements_of_a_story.htm

An education site that indicates the elements of a story.

<http://www.readwritethink.org/materials/lit-elements/>

A non-profit site that provides literary elements mapping, the graphic organizers for story elements.

JUDGING RUBRIC

Fuel Your Imagination! Challenge

| Category | 4 points | 3 points | 2 points | 1 point |
|-----------------------------------|---|---|--|---|
| Focus on Space Exploration | The entire story is related to the assigned topic and allows the reader to understand much more about the topic. | Most of the story is related to the assigned topic. The story wanders off at one point, but the reader can still learn something about the topic. | Some of the story is related to the assigned topic, but a reader does not learn much about the topic. | No attempt has been made to relate the story to the assigned topic. |
| Scientific Facts | At least three scientific facts were included in the story. | Only two scientific facts were included in the story. | Only one scientific fact was included in the story. | There were no scientific facts used in this story. |
| Accuracy of Facts | All facts presented in the story are accurate. | Almost all facts presented in the story are accurate. | About 50% of the facts presented in the story are accurate. | There are several factual errors in the story. |
| Organization | The story is very well organized. One idea or scene follows another in a logical sequence with clear transitions. | The story is pretty well organized. One idea or scene may seem out of place. Clear transitions are used. | The story is a little hard to follow. The transitions are sometimes not clear. | Ideas and scenes seem to be randomly arranged. |
| Character Conflict | It is very easy for the reader to understand the problem the main characters face and why it is a problem. | It is fairly easy for the reader to understand the problem the main characters face and why it is a problem. | It is fairly easy for the reader to understand the problem the main characters face but it is not clear why it is problem. | It is not clear what problem the main characters face. |
| Solution / Resolution | The solution to the character's problem is easy to understand and is logical. There are no loose ends. | The solution to the character's problem is easy to understand, and is somewhat logical. | The solution to the character's problem is a little hard to understand. | No solution is attempted or it is impossible to understand. |

APPENDIX

FYI! Challenge Activity Supplement

Thinking about Science in *Zathura*

In the **Fuel Your Imagination! Challenge**, you have a chance to learn about how to use science in a story. Science helps us understand our world and is fun. Using your understanding of science, you can write a fun and exciting story. You will learn how Chris Van Allsburg used science in *Zathura*, and then you will be able to use science in a story of your own.

After you have read *Zathura*, think about how the author used science in the story, and what each story element does to enhance the reader's experience.

1. CHARACTERS

- What science ideas do we learn through the characters of Danny and Walter?
- How does the author use the characters to show us science ideas?
- Why do we have characters in a story? What do they add to a story?

2. SETTING

- What science ideas are in the setting of *Zathura*?
- How does the author use the setting to show us science ideas?
- What is the purpose of the setting in a story?

3. CONFLICT

- What conflict occurs in the story? How was this conflict resolved (the resolution)?
- How does the author use science in the conflict?
- What is the purpose of conflict in a story?

4. RISING ACTION

- List four major events that occur before the climax of this story. This is called the rising action.
- How does the author use science ideas in the rising action?
- What is the purpose of the rising action?

5. CLIMAX

- What is the Climax of this story?
- How does the author use science ideas in the climax of *Zathura*?
- What is the purpose of the climax in the story?

Now you have written your own story. Describe how you used science in your story, and what each story element does?

1. CHARACTERS

- What science ideas do we learn through the characters in your story?
- How did you use the characters to show us science ideas?
- What is the purpose of characters in any story?

2. SETTING

- What science ideas are in the setting of your story?
- How did you use the setting to show us science ideas?
- What is the purpose of the setting in any story?

3. CONFLICT

- What conflict occurs in the story?
- How was this conflict resolved (the resolution)?
- How did you use science in the conflict?
- What is the purpose of conflict in any story?

4. RISING ACTION

- List four major events that occur before the climax in your story. This is called the rising action.
- How did you use science ideas in the rising action?
- What is the purpose of the rising action?

5. CLIMAX

- What is the Climax of your story?
- How did you use science ideas in the climax of *Zathura*?
- What is the purpose of the climax in any story?



Author Meets NASA Scientist: Turning Imagination into Reality Author/Artist Chris Van Allsburg and NASA Scientist Jennifer Keyes

Description: This activity provides an opportunity for language arts and science teachers to work together to challenge their students to combine science and imagination as they create stories of their own.

Grade Levels: 3-8

Focus Question: How can science facts and creative writing be combined to inspire students to write stories about space exploration?

Instructional Objectives: After viewing *Author Meets NASA Scientist: Turning Imagination into Reality* NASA Digital Learning Network™ event, students will write a short story that includes at least three science facts. Students can be encouraged to include pictures so that their chosen science facts can be more easily identified.

Pre-webcast Activity:

Materials

- Copy of *Zathura*
- Chart paper and markers
- Recording sheet

Introduction

Tell your students that NASA has a new vision for exploration—from the Earth to the Moon, Mars, and beyond. NASA exploration programs will seek answers to profound questions about the origins of our solar system, whether life exists beyond Earth, and how we could live on other worlds. What are the next steps in this exciting new vision? Have the students go to this website to find out more:

http://www.nasa.gov/audience/forkids/home/F_Vision_Slideshow_Text.html

Have your students work in small groups to brainstorm a list of objects found in our Milky Way Galaxy. Then have your students select one object from their list that they would like to further explore and write that object in the blank at the top of their recording sheet.

Next, tell your students that they will be examining the way Van Allsburg blends scientific facts about outer space with his fictional story in *Zathura*.

Body

As a class, read the story *Zathura* by Chris Van Allsburg. Ask the students to notice, first of all, the particular information about space that Van Allsburg chooses to use in *Zathura*. Record these topics on the chart paper. For example:

| Topic | Description |
|--------------|--------------------|
| Meteor | |
| Gyroscopes | |

Closure

After listing the facts found in **Zathura**, go back into the text and examine how Van Allsburg blends scientific information within a fictional story. Record the descriptions on your chart paper. For example:

| Topic | Description |
|-----------|---|
| Meteors | <i>The noise grew louder, like a thousand golf balls bouncing off the roof. The room got so dark, Walter turned on the lights. Then—KABOOM—a rock the size of a refrigerator fell through the ceiling and crushed the television.</i> |
| Gyroscope | <i>Suddenly the house tilted. Everything in the room slid to one side, and Danny got buried under a mountain of furniture.</i> |

Ask the students how **Zathura** relates to the NASA vision for exploration. Announce to the students that they will be watching a videoconference with Author/Artist Chris Van Allsburg and NASA Scientist Jennifer Keyes to see how imagination can become reality. Have the students save their recording sheets for the Post-conference Activity.

Post-webcast Activity:

Materials

- Copy of **Zathura**
- Chart paper from Pre-conference Activity
- Recording sheet
- Writing paper and pencils for the students

Introduction

After watching the archived webcast, ask the students:

- As an author/artist, how does Van Allsburg use his imagination? As a NASA scientist, how does Jennifer Keyes use her imagination in her career?
- How does Van Allsburg use illustrations to capture the scientific concepts? How does NASA use illustrations to capture the scientific concepts?
- What new NASA missions did you learn about in the videoconference?
- What new information did you learn about Chris Van Allsburg?

Refer back to your chart paper from the Pre Activity. Review how Van Allsburg used scientific facts in his fictional story.

Announce to your students that today they will begin to write a fictional story based on their scientific knowledge of outer space.

Body

Have the students take out their Recording Sheet from the Pre-conference Activity. As a class, have the students' share the objects they would like to further explore.

Using the resources from their library and <http://www.nasa.gov>, the students will find 6 facts about their object. They should record these facts on their recording sheets.

Next students will use Van Allsburg's craft as a model for writing their own fictional story. When children begin writing their fictional stories with a collection of information, not only will their imaginations already be stimulated by the act of research and the new things they are learning, but the information will help them to shape their stories and to integrate facts in a believable way. On their recording sheets, have the students expand and elaborate on their facts. For example:

Exploration Topic: Comets

| Fact | My Description |
|--|--|
| Comets are composed of water, ice, dust and carbon- and silicon-based compounds. | As I stood in left field, a dirty snowball fell from the sky and landed beside me with a thud. |

When the students have expanded upon their facts, remind your students how Van Allsburg blends these real facts about space into his fictional story about the Budwings' adventure. Tell them that in their writing today, they will have a chance to try blending facts with fiction.

The students are to write a fictional story, working in at least three scientific facts. Encourage the students to include pictures in their stories so that their chosen science facts can be more easily identified.

Closure

Have the students share their masterpieces with:

- Their peers in their classroom,
- Other classes within their school, and
- Their families at a school Family Night.

If adapting this lesson for use with less experienced writers:

- Create a story blending fact and fiction as a class.
- Use the same facts that Van Allsburg uses in his story, but ask students to make up their own space adventure tales.

Background Information:

(*Zathura's* Teacher's Guide: www.houghtonmifflinbooks.com/features/zathura/educators.shtml)

Zathura Summary

Danny and Walter Budwing don't get along. When their parents go out for the evening, small arguments escalate until finally Walter, the eldest, chases his little brother out of the house and into the park where he tackles him to the ground. As they wrestle, they catch sight of a board game propped up under a tree. It is called "Jumanji, a Jungle Adventure." Shoving the "baby game" at his brother, Walter heads for home with Danny trailing behind. As Walter sits down in front of the TV, Danny examines the game. Lodged underneath the Jumanji game board, the little boy finds another game board called "Zathura," decorated with exciting-looking flying saucers and planets. Danny starts to play on his own, struggling to read the first game card, "Meteor showers, take evasive action." Immediately, real meteors begin to crash down through the boys' roof! Realizing that they could not possibly still be on Earth, Danny tries hard to convince his disbelieving older brother of the power of the game. Finally, Walter agrees to play.

As they play, the game's events happen in real life – Walter sticks to the ceiling for a time when his gravity is lost. A defective robot seems bent on destroying them. Danny, affected by a gravity surplus, becomes heavy, dense and round! It is only by working together that they begin to make progress - Walter uses heavy Danny as a bowling ball to flatten the attacking robot. When Walter is swallowed up by a black hole, all seems to be lost until the boys find themselves suddenly wrestling again next to the tree in the park. Seeming not to remember the game's events, Danny wants to take it home. Walter, much the wiser for his experience, tosses the game in the trashcan and suggests a game of catch, much to his little brother's delight.

Zathura Special Features

At the end of Chris Van Allsburg's *Jumanji*, Judy and Peter deposit the game in its box with great relief back under the tree in the park where they found it – and later see their neighbors Danny and Walter Budwing carrying the box home! After years of wondering what might have happened to the boys who didn't like to read directions, *Zathura* gives readers an answer! Van Allsburg's textured drawings, made with litho pencil on coquille board, show Walter and Danny as two boys full of personality – ornery and argumentative, at first. [Note: Van Allsburg actually used his own daughters as models for the Budwing boys' interactions!] While the world of Jumanji invades the home of Peter and Judy, the Budwing boys' home is transported by Zathura into outer space, where the strange events the game produces seem delightfully bizarre – a meteor in the living room, a portable black hole. The story is fast-paced and full of action, and readers will enjoy the realistic brotherly banter between the two boys as much as the description of the boys' adventures.

As in many of Van Allsburg's books, the Budwings are changed by the difficult experience they go through together. Instead of antagonizing each other, by the end of the story the boys have learned that working together is the way to solve problems, and that they can enjoy each other's company. We are left with a signature Van Allsburg ending as well – *did* the boys really go into outer space, or was it just a strange dream?

Find Fritz

Fritz is in the driver's seat of the little toy sports car perched on Danny and Walter's shelf in the bedroom.

Guiding Questions for a Zathura Read-aloud

- How would you describe Danny and Walter's relationship at the beginning of the book? If you have a brother or sister, can you relate to any of the things that happen between Walter and Danny?
- What is keeping Danny and Walter from getting along with each other?
- Danny helps Walter by tying him to the sofa when he is about to fly through the hole in the roof. Do you think Walter is used to being helped by his little brother? How do you think this incident starts to change Walter's perception of Danny?
- What happens between the time when Walter is swallowed by the black hole and the time when the boys find themselves wrestling on the grass in the park? How did they get there?
- How has the boys' relationship changed as a result of their experience?

Additional Resources:

Space Science: Adventure Is Waiting

A dynamic education program to build student skills for grades 3-5 and 6-8 in both science and language arts awaits. Developed in cooperation with both NASA and Scholastic, **Space Science: Adventure Is Waiting** has been generously sponsored by Columbia Pictures. Look at the website for easy-to-use national standards-based lessons and reproducibles, with inspiring images of the upcoming feature film Zathura. This adventure film is based on renowned author/illustrator Chris Van Allsburg's acclaimed children's book, published by Houghton Mifflin.

<http://teacher.scholastic.com/lessonplans/spacescience/index.htm>

Author Study

What was the first book Chris Van Allsburg published? What does Chris like to do for recreation? Have the students do an author study to find the answer to these questions. For more information about Van Allsburg go to: <http://www.chrisvanallsburg.com/flash.html>

NASA Mission: STARDUST

Stardust is the first U.S. space mission dedicated solely to the exploration of a comet, and the first robotic mission designed to return extraterrestrial material from outside the orbit of the Moon. The Stardust spacecraft was launched on February 7, 1999, from Cape Canaveral Air Station, Florida. The primary goal of Stardust is to collect dust and carbon-based samples during its closest encounter with Comet Wild 2. In January 2006, Stardust and its precious cargo will return by parachuting a reentry capsule weighing approximately 125 pounds to the Earth's surface. To find out more about this historic mission go to: <http://stardust.jpl.nasa.gov/>

NASA Mission: Mars Reconnaissance Orbiter

The Mars Reconnaissance Orbiter launched August 12, 2005. It will study the history of water on Mars and will be able to look at small-scale features. Previous cameras on other Mars orbiters could identify objects no smaller than a school bus; this camera will be able to spot something as small as a dinner table. The orbiter's telecommunications systems will also establish a crucial service for future spacecraft, becoming the first link in a communications bridge back to Earth. The orbiter's telecommunications systems will become the beginning of an "interplanetary Internet" that can be used by numerous international spacecraft in coming years: <http://marsprogram.jpl.nasa.gov/mro/>

NASA Mission: Phoenix Mars Lander

The Phoenix Mars Lander is scheduled for launch in August 2007. Phoenix is specifically designed to measure volatiles (especially water) and complex organic molecules in the arctic plains of Mars. Phoenix is a fixed lander, using a robotic arm to dig to the ice layer and analyze samples with a suite of sophisticated on-deck scientific instruments. For more information on this future Mars Mission, go to: <http://phoenix.lpl.arizona.edu/>

NASA Mission: Lunar Reconnaissance Orbiter

The Lunar Reconnaissance Orbiter (LRO) is the first of the Robotic Lunar Exploration (RLE) missions, planned for launch by late Fall 2008 and will orbit the Moon nominally 1 year. The LRO mission emphasizes the overall objective of obtaining data that will facilitate returning men safely to the Moon where testing and preparations for an eventual manned mission to Mars will be undertaken. <http://lunar.gsfc.nasa.gov/index.html>

Blending Fact and Fiction Worksheet

Name _____

Blending Fact and Fiction

Topic I would like to further explore _____

| Fact | My Description |
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